CLAIMS

1. A process allowing the measuring of the viscosity of a culture medium of microorganisms (5) comprising the steps consisting successively in:

a) The immersion of at least one particle (3) that is charged electrically, is magnetic or can be magnetized or covered with at least one magnetic or magnetizable layer in this culture (4),

b) The subjection of this culture to an electrical, magnetic or electromagnetic field, preferably a magnetic field, in such a manner as to put this particle (3) in motion,

c) The optical detection of the degree of liberty of motion of this particle in this culture, preferably by optical measuring, which process does not use a scanning microscope.

2. The process according to Claim 1, characterized in that step b) consists in subjecting this culture (4) to an electromagnetic field, possibly applied by impulsion.

3. The process according to any one of Claims 1 or 2, characterized in that step b) consists in subjecting this culture (4) to a progressive augmentation of an electromagnetic field.

4. The process according to any one of the previous claims, characterized in that this electrical, magnetic or electromagnetic field is generated by means for generating a field in motion.

5. The process according to any one of claims 1 to 4, characterized in that the culture (4) flows in a constant stream through an open reactor (1).

6. The process according to any one of claims 1 to 5, characterized in that the culture (4) flows in a discontinuous stream through an open reactor (1) at given time intervals.

7. The process according to any one of the previous claims, characterized in that step c) consists in lighting this particle (3) with a light source and in detecting the motion of this particle (3) in this culture (4).

8. The process according to any one of the previous claims, characterized in that the particle (3) generates a signal.

9. The process according to the previous claim, characterized in that the particle (3) is of the fluorescent, phosphorescent, radioactive or chemo-luminescent type.

10. The process according to any one of claims 1 to 9, which process allows the detection of the formation and of the development of biofilms (6) in this culture (4), characterized in that it comprises:

- A measuring of the viscosity of this culture (4) according to the process as described in any one of Claims 1 to 10 at a time t=0 corresponding to the seeding of this culture (4),

- At least one measuring at a time t of the viscosity of this culture (4) according to the process as described in any one of Claims 1 to 10, and
- A step for the comparison of measurements at t0 and t.

11. The process according to any one of claims 1 to 10, characterized in that this culture (4) is homogeneous or non-homogeneous, preferably non-homogeneous.

12. An apparatus that allows the measuring of the viscosity of a culture of microorganisms, characterized in that it comprises:

- At least one culture reactor (1) for receiving this culture (4) in order to perform the detection of the formation and of the development of biofilms (6),
- At least one particle that is electrically charged or is magnetic or magnetizable or covered with at least one magnetic or magnetizable layer, immersed in the culture (4),
- Means for generating an electrical, magnetic or electromagnetic field, which field is applied to this particle (3),
- An apparatus for the optical detection of the motion of this particle, other than a scanning microscope.

13. The apparatus according to the previous claim, characterized in that this reactor (1) has a closed end in such a manner as to form a flat bottom (2).

14. The apparatus according to the previous claim, characterized in that the bottom (1) of this reactor (1) has one or several cavities (8, 9) or grooves for receiving this particle or these particles.

15. The apparatus according to Claim 12, characterized in that this reactor (1) has a closed end in such a manner as to form a hemispherical bottom (2).

16. The apparatus according to Claim 12, characterized in that this reactor (1) has two open ends.

17. The apparatus according to Claim 6, characterized in that reactor (1) is configured in such a manner as to allow this culture (4) to flow in a constant stream or in a discontinuous stream at given time intervals.

18. The apparatus according to any one of Claims 12 to 17, characterized in that this particle (3) generates a signal detectable by this apparatus for the detection of motion.

19. The apparatus according to the previous claim, characterized in that this particle (3) is of the fluorescent, phosphorescent, radioactive or chemo-luminescent type.

20. The apparatus according to any one of Claims 12 to 19, characterized in that this particle (3) is configured in such a manner that it is in a stable position at rest in this reactor (1).

21. The apparatus according to any one of Claims 12 to 20, characterized in that this particle (3) has a size approximately identical to the size of the microorganisms (5).

22. The apparatus according to any one of Claims 12 to 21, characterized in that this optical detection apparatus comprises a light source emitting in the direction of this particle (3) and comprises detection means allowing the movement of this particle (3) in the culture medium (4) to be detected.

23. The apparatus according to any one of Claims 12 to 22, characterized in that this apparatus allows the detection of the formation and of the development of biofilms (6) in the culture medium (4), characterized in that it comprises:

- Measuring means for measuring the viscosity of the culture medium at given time intervals, and
- Comparison means allowing the measurements obtained to be compared.